FIG. 1

1 HEAD END PROCESSOR FOR TV, VOICE AND DATA SIGNALS

R.F. CHANNEL FOR PCM 91

REMOTE MODULE UNIT 21

TV 22

33 · 32 · 32 · 33 · 32 · 32 · 33

18

DATA PROCESSING 19

CPU 20

ADMINISTRATION

FREQUENCY POWER AMPLIFIER

FORWARD 16

RETURN 17

FREQUENCY SPLITTER 10

ONLY RECEPTION

SUB-BAND SELECTOR 11

VOICE OR DATA SELECTOR 12

PBX 13

LOCAL TELEPHON NETWORK 15

14 PUBLIC TELEPHONE NETWORK

M I X E R 6 / 7 / 8 / 9

EXTERNAL TV CHANNELS 2

COMMUNICATION CHANNEL 3

VOICE & DATA CHANNEL 4

ONLY TRANSMITION

ENCODER TO VGA * TO TV CONVERTER 90

CPU TERMINAL 5

LOCAL

* THE EQUIPMENT IS NORMALLY INTEGRATED IN CPU TERMINAL

FIG. 2

VOICE / DATA CHANNEL

4

N° INPUTS
FROM PBX   13
ONLY RECEPTION

35 VOICE TO DATA CONVERTER PAM

39 MULTIPLEXER

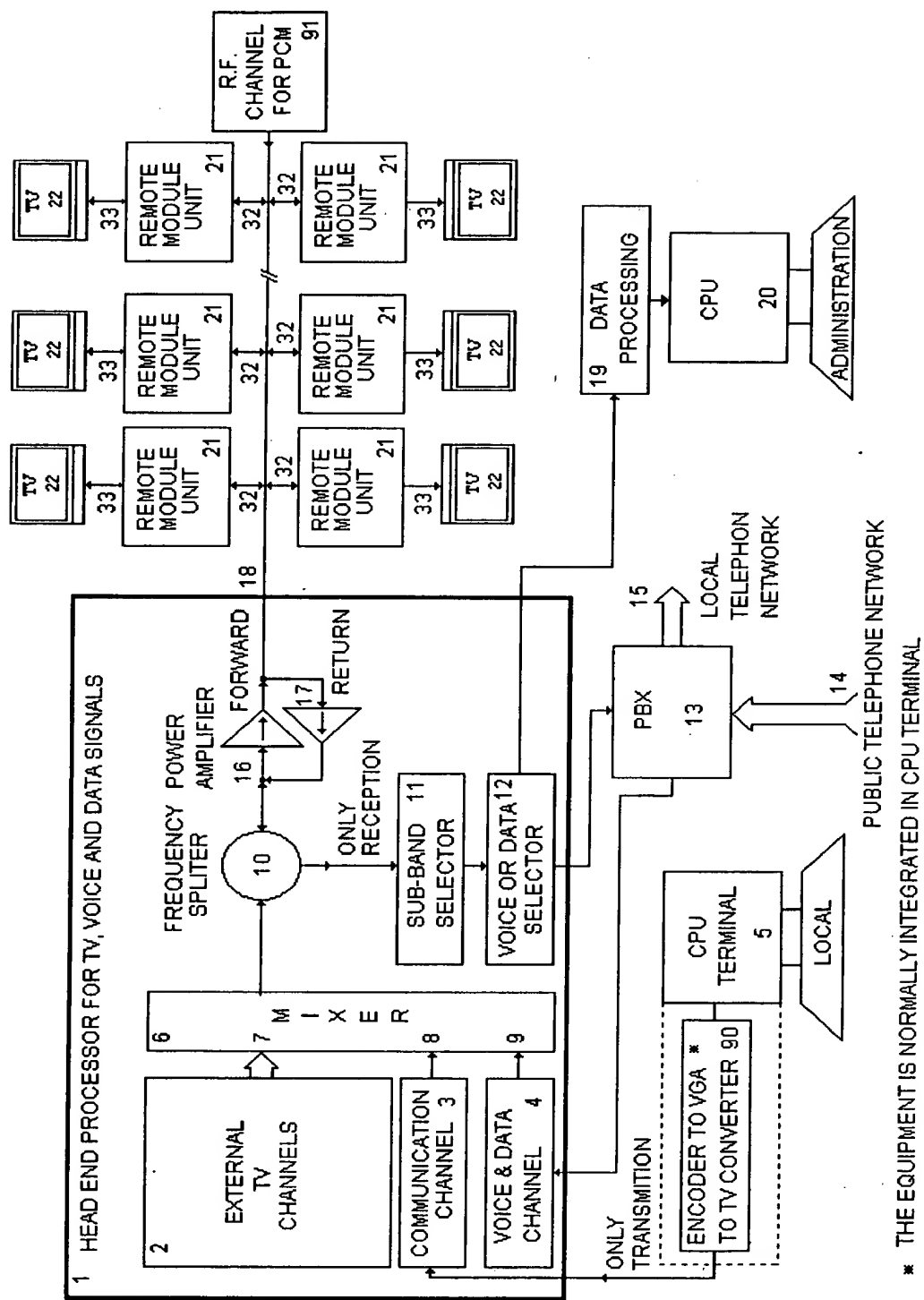36 VOICE / DATA CHANNEL GENERATOR

37 PCM GENERATOR

38 CLOCK

TO MIXER
6

FIG. 3

INFORMATION FORMAT FOR EACH ONE OF THE 10 LINES IN FIRST PLACE

FIG. 4
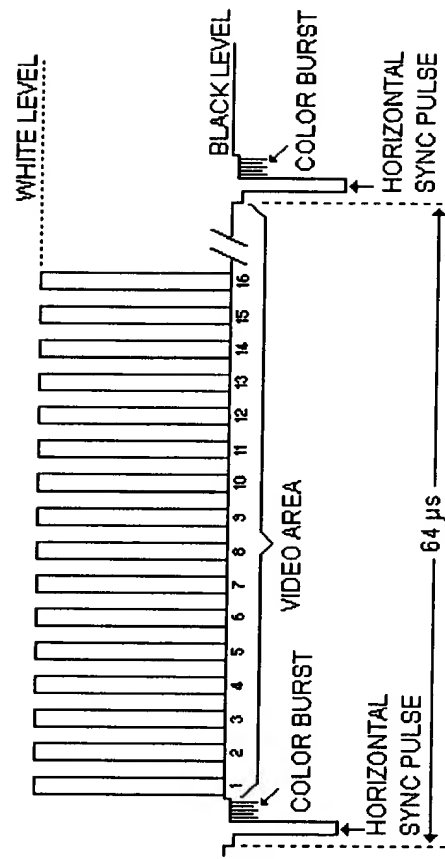
BITS PATTERN OF LINE 1

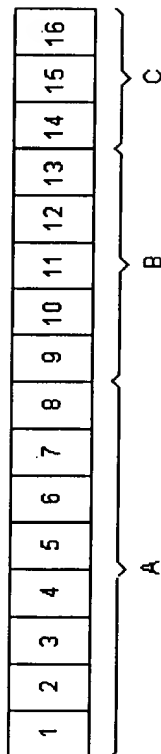| 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

A = 8 BITS TO DEFINE EACH PCM UNITARY MODULE (FOR DATA)

B = 5 BITS FOR GENERAL INFORMATION.
(UP TO 3 DIFFERENTS PAGES WITH INFORMATION)
FIRST 3 BITS DEFINE THE FORMAT, NEXT 2 BITS DEFINE NUMBER OF PAGES

C = 3 BITS TO DEFINE NUMBER OF PAGES OF DATA CHANNEL

FIG. 5

BITS SHAPE OF LINES 2 TO 10

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

A
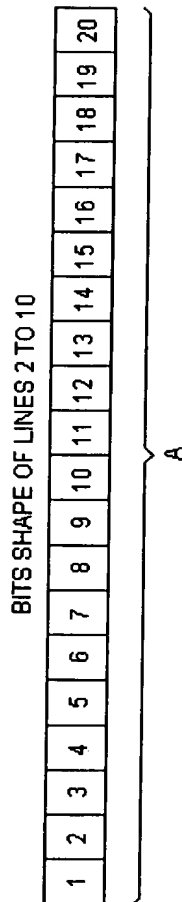
A = MAXIMUN QUANTITY OF BITS PER LINE ACCORDANCE TO ACTUAL PROGRAM
EVERY LINE IT IS USE FOR TO WRITE THE NUMBER OF CHANNELS, EACH ONE
NUMBER DEFINE IF THE CHANNEL WILL BE OPEN, IS IT REQUESTED

LINE 2 = LIST OF CHANNEL BASIC

LINE 3 = LIST OF PPV CHANNELS

LINE 4 = LIST OF SPECIAL EVENTS CHANNELS

LINE 5 = LIST OF ADDITIONAL CHANNELS

LINE 6 TO 10, ARE USE FOR TO SCRABBLE CHANNELS

FIG. 6

FRONT VIEW

CHANNEL 23 21 PAGES

24 25 26

5

REAR VIEW

CABLE TV PHONE ALARMS

IN/OUT IN

27 28 29 31 30

35

34

32

SPLITER

18 18

DISTRIBUTION NETWORK

22

33

FIG. 7

FIG. 8

RF INPUT NETWORK

27

OUTPUT TUNER CHANNELS 3/4   50

OUTPUT TO TV

28

UP

↑

PAGES CONTROL

25

↓

DOWN

V

A

SYNCHRONOUS & VIDEO MIXER   47

FLASH RAM   48

CPU PROGRAM CONTROL   49

46   VIDEO/AUDIO INPUTS (2) SWITCH

VIDEO BB   N/C

SYNCHRONOUS GENERATOR   43

SYNCHRONOUS SEPARATOR   44

A/D CONVERTER   45

VIDEO

N/A

AUDIO

40   TUNER TV CHANNEL

41   INFRARED DETECTOR

26   CHANNEL DISPLAY

42   TUNER DATA CHANNEL

IR REMOTE

23

UP

↑

CHANNELS

24

↓

DOWN

FIG. 9

EXT.
NETWORK

BI-DIRECTIONAL
MIXER

TO BUZZ
CIRCUIT

27

55

56 CHANNEL
FILTER

57 INPUT
CHANNEL
SELECTOR

58 PULSE
REGENERATION

59 (VBAP)
AUDIO CHANNEL
PROCESSOR

VOICE
DATA
OUTPUT

29

60 CLOCK

64 CHANNEL
SELECTOR
FOR PCM

61 BAND
PASS
FILTER

62 CHANNEL
GENERATOR

63 OUTPUT
UNITARY
CHANNEL SELEC

65 INPUT FOR
AUDIO CHANNEL
PROCESSING

29

INPUT
VOICE
DATA

66 ALARMS
INPUT

67 MULTITONE
GENERATOR
(DTMF)

FIG. 10

SUB-BAND SELECTOR

11

FROM
FREQUENCY
SPLITER 10

71

TUNER SELECTOR
SUB-BAND CHANNEL

72

SYNCRONOUS
SEPARATION

TO VOICE
OR DATA
SELECTOR 12

FIG. 11

VOICE OR DATA SELECTOR

12

FROM SUB-BANDA SELECTOR 11

UNITARY CHANNEL SELECTOR 75

PULSE REGENERATION 76

RAM MEMORY 78

MASTER CLOCK 77

CPU CONTROLLER 79

AUDIO CHANNEL PROCESSOR (VBAP) 80

CHANNEL PBX SELECTOR 82

PCM CHANNEL CONTROLLER 81

TO * PBX 13

TO * PCM 19

TO PBX * 13 DIGITAL INPUT

TO PBX * 19 DIGITAL INPUT

* THIS OUTPUT DEPENDS ON CONFIGURATION OF THE EXTERNAL EQUIPMENT

FIG. 12

FROM VOICE
AND DATA
SELECTOR 12

19 *   DATA PROCESSING

PULSE *   86
SHAPE
RECONSTRUCTION

87
RAM *

DATA *   88
CONTROLLER

TO CPU 20
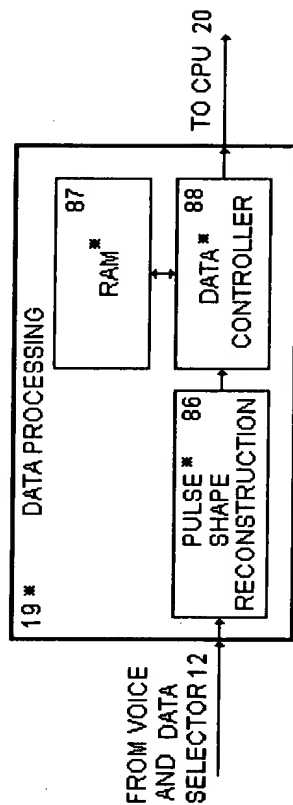
* THESE CIRCUITS WOULD BE PART OF CPU TERMINAL (20)

FIG. 13

WHITE LEVEL

GRAY LEVELS

BLACK LEVEL

COLOR BURST

HORIZONTAL SYNC PULSE

VIDEO AREA

COLOR BURST

HORIZONTAL SYNC PULSE

64 µs

FIG. 14

FIG. 14 — 21

Fig. 7/8

46 VIDEO A/D & U & C & IO SWITCH

47 VIDEO SYNC & DEC MIX

49 CPU

48 RAM

48 RAM

44 SYNC SEP

45 A/D

43

40 TUNNER CHANNEL
42 TUNNER DATA CHANNEL
50 OUTPUT TUNNER CHANNEL

Fig. 9

56 to 65

67 DTMF

64 PCM SEL

60 CLK

66 ALARMS

POWER SUPLY

LINE TRANSF

D1
D2
D3
D4
REG

CAP CAP

26 LCD-DISPLAY

41 INFRARED & CONTROL DISPLAY

25

23 IR DET

24

27
28
29
31
30

FIG. 15

RING CIRCUIT

FROM 68
(FIG 9)

| 90 CHANNEL FILTER |

| 91 INPUT CHANNEL SELECTOR |

| 92 CLOCK |

| 93 PULSE REGENERATION |

| 94 CPU CONTROL |

| 95 RAM |

| 96 RING |

| 97 VOLTAGE LEVEL OF PHONE LINE |

+48 V

| 98 VOICE RELAY (N / O) |

TO PHONE 29 CONNECTOR

TO VOICE CONNECTOR 29

FIG. 16

```
         ┌─────────────────┐
         │       100       │
         │   TEXT / IMAGE  │
         │    RECEPTION    │
         │   FLOW CHART    │
         └─────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │  TUNER 42 RECEIVES │
        │      DATA ON       │
        │   PRE-SELECTED     │
        │   CHANNEL    105   │
        └────────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │  GET HORIZONTAL    │
        │   AND VERTICAL     │
        │ SYNC INFORMATION   │
        │ TO READ THE FIRST  │
        │   SCAN LINE   110  │
        └────────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │   GET SVS KEY      │
        │              115   │
        └────────────────────┘
                  │
                  ▼
              ◇ DOES
            KEY MATCH        ──── no ────►
            SVS MODULE
              KEY ?
               120
                  │ yes
                  ▼
        ┌────────────────────┐
        │  READ BITS 9 TO 13 │
        │  (IMAGE TYPE) AND  │
        │   STORE IN RAM 48  │
        │              125   │
        └────────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │ READ BITS 14 TO 16 │
        │ (NUMBER OF PAGES)  │
        │ AND STORE IN RAM 48│
        │              130   │
        └────────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │  READ SCANED LINES │
        │              135   │
        └────────────────────┘
                  │
                  ▼
        ┌────────────────────┐
        │  STORE IMAGE IN    │
        │   RAM 48     140   │
        └────────────────────┘
```

FIG. 17

```
        ┌─────────────┐
       (    200        )
       ( CHANNELS      )
       ( DISPLAY       )
       ( FLOW CHART    )
        └──────┬──────┘
               │
   ┌───────────▼──────────┐
   │ READ CHANNEL'S       │
   │ NUMBERS IN 4TH       │
   │ SCANNED LINE   205   │
   └──────────┬───────────┘
              │
   ┌──────────▼───────────┐
   │ STORE NUMBERS        │
   │ IN RAM 48            │
   │                210   │
   └──────────┬───────────┘
              │
   ┌──────────▼───────────┐
   │ TURN SVS ON          │
   │                215   │
   └──────────┬───────────┘
              │
   ┌──────────▼───────────┐
   │ TUNER 40 STARTS ON   │
   │ PRE-SELECTED         │
   │ CHANNEL        220   │
   └──────────┬───────────┘
              │
            ◇ IS
              CHANNEL
              NUMBER
              SELECTED BY     ── no ──►
              TUNER 40 IN
              RAM 48 ?
              225
              │ yes
   ┌──────────▼───────────┐
   │ DISPLAY CHANNEL      │
   │                230   │
   └──────────┬───────────┘
              │
            ◇ HAS THIS
  ◄── yes ── CHANNEL NUMBER
              CHANGED ?
              235
              │ no
   ┌──────────▼───────────┐
   │ TURN SVS OFF         │
   │                240   │
   └──────────────────────┘
```

FIG. 18

```
        ┌─────────────────────┐
        │         300         │
        │  VOICE FROM PBX     │
        │   FLOW CHART        │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  SEND PBX           │
        │  COMMUNICATIONS     │
        │  TO PCM SYSTEM  305 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  SEND PCM SYSTEM    │
        │  OUTPUT THROUGH     │
        │  HEAD END       310 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  SVS RECOGNIZES     │
        │  IT'S PCM SLOT  315 │
        └─────────────────────┘
                   │
                  ◇
              IS
          THE PHONE        yes
            BUSY ?
                  ◇
               320
                   │ no
        ┌─────────────────────┐
        │  LOCAL RINGER       │
        │  IS ACTIVATED       │
        │  (CHANNEL ALARMS)   │
        │                 325 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  SVS CONNECTS ITS   │
        │  OUTPUT PCM SLOT    │
        │                 330 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  PBX RECOGNIZES     │
        │  COMMUNICATION      │
        │                 335 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  PHONE CALL END     │
        │  (HANG-UP)      340 │
        └─────────────────────┘
                   │
        ┌─────────────────────┐
        │  PBX IS             │
        │  DISCONNECTED       │
        │                 345 │
        └─────────────────────┘
```

FIG. 19

```
        ╭─────────────╮
        │     400     │
        │ VOICE OR DATA│
        │  FROM SVS   │
        │  FLOW CHART │
        ╰─────────────╯
               │
               ▼
    ┌──────────────────────┐
    │  EXECUTE SVS         │
    │  COMMUNICATIONS      │
    │  IN PCM FORMAT   405 │
    └──────────────────────┘
               │
               ▼
    ┌──────────────────────┐
    │  SVS CONNECTS ITS    │
    │  OUTPUT PCM SLOT     │
    │                 410  │
    └──────────────────────┘
               │
               ▼
    ┌──────────────────────┐
    │  PBX CONNECTS ITS    │
    │  INPUT PCM SLOT      │
    │  (CALL ON)      415  │
    └──────────────────────┘
               │
               ▼
    ┌──────────────────────┐
    │  PHONE CALL END      │
    │                 420  │
    └──────────────────────┘
               │
               ▼
    ┌──────────────────────┐
    │  PBX IS              │
    │  DISCONNECTED  425   │
    └──────────────────────┘
```

FIG. 20

EACH S

```
            ╭────────────╮
           ╱     500      ╲
          │  ALARMS  FROM  │
          │      SVS       │
          │  FLOW CHART    │
           ╲              ╱
            ╰──────┬─────╯
                   │
    ┌─────────────▼──────────┐
    │  SITE ALARMS ARE        │
    │  SENT  THROUGH          │
    │  PCM SLOT               │
    │                   505   │
    └─────────────┬──────────┘
                  │
    ┌─────────────▼──────────┐
    │  SVS SENDS KEY          │
    │  TO FRONT DESK          │
    │  CPU 20  (TO BE         │
    │  RECOGNIZED)    510     │
    └─────────────┬──────────┘
                  │
    ┌─────────────▼──────────┐
    │  SITE SVS SENDS         │
    │  ASTERISK (SYMBOL)      │
    │  TO HEAD END'S          │
    │  MODULE 12      515     │
    └─────────────┬──────────┘
                  │
    ┌─────────────▼──────────┐
    │  CPU 20 RECOGNIZE       │
    │  SVS AND READ THE       │
    │  ALARM NUMBER   520     │
    └─────────────┬──────────┘
                  │
              ╱───▼───╲
             ╱   IS    ╲
            ╱ THE ALARM ╲       no
            ╲DISCONNECTED?╱──────
             ╲         ╱
              ╲  525  ╱
               ╲──┬──╱
                  │ yes
    ┌─────────────▼──────────┐
    │  READ NEXT EVENT        │
    │                   530   │
    └────────────────────────┘
```

FIG. 21

```
          ┌─────────────────┐
          │       600       │
          │   TEXT / IMAGE  │
          │   FLOW CHART    │
          └─────────────────┘
                   │
          ┌─────────────────────┐
          │ GET CHANNEL FROM    │
          │ TUNER 40      605   │
          └─────────────────────┘
                   │
              ╱─────────╲
             ╱    IS     ╲      no
            ╱ THIS A DATA  ╲──────────►
            ╲  CHANNEL ?   ╱
             ╲           ╱
              ╲─────────╱
                 610
                   │ yes
          ┌─────────────────────┐
          │ READ IMAGE TYPE     │
          │ AND ITS CONTENT     │
          │ FROM RAM 48    615  │
          └─────────────────────┘
                   │
          ┌─────────────────────┐
          │ MIX HORIZONTAL      │
          │ AND VERTICAL SYNC   │
          │ PULSES WITH IMAGE   │
          │                620  │
          └─────────────────────┘
                   │
          ┌─────────────────────┐
          │ SEND IMAGE TO TV    │
          │ SET 22         625  │
          └─────────────────────┘
                   │
       yes    ╱─────────╲
      ◄──────╱ NEXT PAGE ? ╲
             ╲           ╱
              ╲─────────╱
                 630
                   │ no
              ╱─────────╲
             ╱    IS     ╲      no
            ╱  TUNER 40    ╲──────────►
            ╲ SET TO DATA  ╱
             ╲ CHANNEL ?  ╱
              ╲─────────╱
                 635
                   │ yes
          ┌─────────────────────┐
          │ GO TO NEW DATA      │
          │    SCREEN      640  │
          └─────────────────────┘
```